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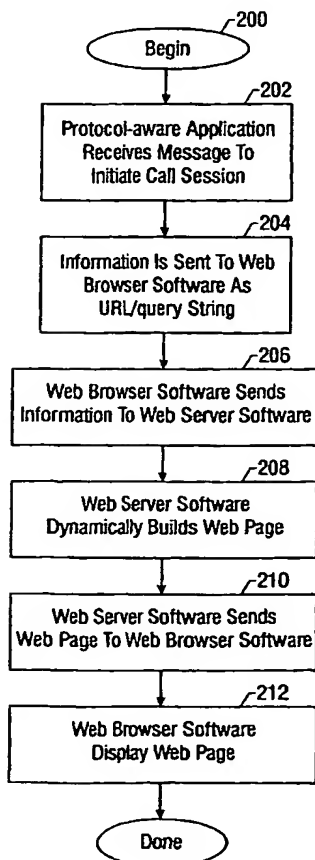
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(54) Title: **PROCESSING OF CALL SESSION INFORMATION**



(57) Abstract: An agent server (20) receives a message relating to a call session from an agent client (10) connected to a data network (12). The agent server (20) extracts information from the message, sends the information to a web browser (24), and updates data in the web browser (24) based upon the message information. The data may be displayed in a web page and may include information pertinent to the call session. The data is provided automatically in real time.

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PROCESSING OF CALL SESSION INFORMATION

FIELD OF THE INVENTION

This invention relates to network-based call sessions and, more particularly, to providing information in a web browser in response to messages communicated during call sessions.

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BACKGROUND

Data networks are widely used to link various types of network elements, such as personal computers, servers, gateways, network telephones, and so forth. Data networks may include private networks (such as local area networks or wide area networks), and public networks (such as the Internet). Popular forms of communications between network elements across such data networks include electronic mail, file transfer, web browsing, and other exchanges of digital data.

With the increased capacity and reliability of data networks, voice and multimedia communications (including telephone calls, video conferencing, and so forth) over data networks have become possible. Voice and multimedia communications over data networks are unlike voice and multimedia communications in a conventional circuit-switched network such as the public switched telephone network (PSTN), which provides users with dedicated, end-to-end circuit connections for the duration of each call. Communications over data networks, such as IP (Internet Protocol) networks, are performed using packets or datagrams that are sent in bursts from a source to one or more destination nodes. Voice data, and other forms of multimedia streaming data sent over a data network typically share network bandwidth with conventional non-streaming data (e.g., data associated with electronic mail, file transfer, web access, and other traffic).

Various standards have been proposed for audio and multimedia communications over data networks. One such standard is the H.323 Recommendation from the International Telecommunication Union (ITU), which describes terminals, equipment and services for multimedia communications over data networks. Another standard for audio and multimedia communications is the

Session Initiation Protocol (SIP), which establishes, maintains, and terminates multimedia sessions over a data network. SIP is part of a multimedia data and control architecture developed by the Internet Engineering Task Force (IETF).

5 A communications network may include a collection of different types of terminals, such as terminals coupled to packet-based networks (e.g., computers, network telephones, etc.) and terminals coupled to circuit-switched networks (e.g., standard analog or digital telephones). Inter-operation between different types of terminals may be possible, and may be accomplished by use of a gateway, such as a PSTN gateway, which converts between packet-based data and circuit-switched data
10 in a call session. Advances in technology have thus improved inter-operability between packet-based telephony devices and circuit-switched telephony devices, increasing the practical reach of IP telephony to users.

The availability of telephony features in computer-based systems and networks enables the collaboration between IP telephony and other familiar
15 computer operations, such as the presentation of graphical user interfaces (GUIs). For some operations, particularly in service-oriented environments, a called party may wish to access information already available to the called party relating to a caller, for example. Getting this information in real time is typically not possible, however, and the retrieval of available information may, in fact, slow down the
20 transaction between the caller and the service provider.

Thus, there is a continuing need for the real-time automatic retrieval of information relating to a caller during network call sessions.

SUMMARY

25 In general, according to one embodiment, a method includes receiving a message relating to a state of a call session over a data network, extracting information from the message, sending the information to a web browser, and updating data in the web browser based on the message information. The message received may be according to a protocol defining real-time interactive sessions. The
30 data updated may be a web page in the web browser.

Advantages offered by some embodiments of the invention may include one or more of the following. By displaying a web page during a call session on a data network, valuable information about a caller may be provided in real time. The web page may be related to the information supplied with the message. The web page may be supplied automatically, thus avoiding distractions for the recipient of the call session message, who may then service the sender of the call session message with undivided attention.

Other features and advantages will become apparent from the following description, from the drawings, and from the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a block diagram of a communications system according to one embodiment of the invention;

Figure 2 is a block diagram of a user agent server according to one embodiment of the invention;

Figure 3 is a diagram of a web browser with a URL/query string combination according to one embodiment of the invention;

Figure 4 is a flow diagram of call session initiation according to one embodiment of the invention;

Figure 5 is a flow diagram of call session termination according to one embodiment of the invention; and

Figure 6 is a message flow diagram of system operation according to one embodiment of the invention.

DETAILED DESCRIPTION

In the following description, numerous details are set forth to provide an understanding of the present invention. However, it will be understood by those skilled in the art that the present invention may be practiced without these details and that numerous variations or modifications from the described embodiments may be possible. Although reference is made to the Session Initiation Protocol (SIP) in the described embodiments, further embodiments may include other types of protocols or standards for establishing real-time interactive call sessions.

In accordance with the several embodiments described herein, a system may communicate messages from a user agent client (calling party) to a user agent server (called party) relating to various states of a call session. At the user agent server side, the messages may be used to navigate to a web page, which may be located on a web server system accessible by the user agent server. Information in the messages communicated to the user agent server may be used to retrieve information from a database located on the web server. A web browser on the user agent server may communicate with the web server system to retrieve the data. The data may then be presented back to the called party by the web browser, as a web page, for example. The web page thus displayed on the user agent client (called party) may be useful during the call session.

In Figure 1, a user agent client (calling party) 10 is connected to a data network 12, which is a packet-based network. The user agent client 10 includes a telephone 16. The user agent client 10 may be a computer system with telephony capability, a standard telephone, a network phone, or a "soft" phone, as examples. The user agent client 10 may also be capable of presenting video and other types of data during a call session, such as in a video conferencing session. In the disclosed embodiments, the user agent client 10 is the initiator of an Internet Protocol (IP) call session. The designation of "server" and "client" in Figure 1 may be switched, since a system may be a "client" when initiating a call session and a "server" when receiving a request for a call session.

The user agent client 10 may also be capable of initiating a call to a Public Switched Telephone Network, or PSTN (not shown). The call may be communicated

through an intermediary, such as a PSTN gateway (not shown). PSTN gateways provide a connection between circuit-switched networks, such as PSTNs, and packet-based networks, such as the data network 12. The user agent client 10 may even be the PSTN gateway itself, which can route calls between a PSTN-connected telephone and the user agent server 20.

As further shown in Figure 1, a user agent server (called party) 20 coupled to the data network 12 includes equipment 26 to enable communication in a network call session. The user agent server 20 further includes a protocol-aware application program 22 and a web browser program 24. As will be shown below, the protocol-aware application 22 is able to process protocol information relating to a call session with the user agent client 10. Such protocol information relates to messages exchanged between the end points of a call session. Example messages include messages to initiate a call, messages indicating a status of a call, and messages terminating a call. The protocol information may be used by the user agent server 20 to access other information for presentation in a web browser 24.

The user agent server 20 is coupled to a web server 40. In the embodiment of Figure 1, the web server 40 is part of a community 30 such that the user agent server 20 may access the web server 40 over a private network such as a local area network (LAN). As used here, a "community" may refer to any collection of systems that may be grouped together. For example, the community 30 may include an enterprise, such as a corporation or other organization. User systems within the community 30 may be computer systems and the like.

In other embodiments, the web server 40 may be remotely accessible to the user agent server 20, such as by connection to the data network 12. The web server 40 includes a web server program 42 as well as server storage or database 32. As described herein, the database 32 is any collection of data elements. According to one embodiment, the protocol information received by the protocol-aware application software 22 may be used to access the database 32 of the web server 40.

As used here, a "data network" or "network" may refer to one or more communications networks, channels, links, or paths, and systems or devices (such as

5 routers) used to route data over such networks, channels, links, or paths. Packet-based data networks communicate with packets, datagrams, or other units of data over the data networks. Unlike circuit-switched networks, such as the PSTN, which provide a dedicated end-to-end connection or physical path for the duration of a call session, a packet-based network is one in which the same path may be shared by several network elements.

10 Packet-based networks may be packet-switched networks, such as Internet Protocol (IP) networks, which are based on a connectionless internetwork layer. Packets or other units of data transmitted into a packet-switched data network may travel independently over any path (and possibly over different paths) to a destination point. The packets may even arrive out of order. Routing of the packets is based on one or more addresses carried in each packet. Packet-based networks may also be connection-oriented networks, such as Asynchronous Transfer Mode (ATM) and Frame Relay networks. In a connection-oriented packet-based network, 15 a virtual circuit or connection is established between two end points. In such connection-oriented networks, packets are received in the same order in which they were transmitted.

20 One version of IP is described in Request for Comments (RFC) 791, entitled "Internet Protocol," dated September 1981. Other versions of IP, such as IPv6, or other connectionless, packet-switched standards may also be utilized in further embodiments. A version of IPv6 is described in RFC 2460, entitled "Internet Protocol, Version 6 (IPv6) Specification," dated December 1998.

25 One protocol that provides for establishment of call sessions over the data network 12 includes a Session Initiation Protocol (SIP). SIP is part of the multimedia data and control architecture from the Internet Engineering Task Force (IETF). A version of SIP is described in RFC 2543, entitled "SIP: Session Initiation Protocol," dated 1999. SIP may be used to initiate call sessions as well as to invite members to a session that may have been advertised by some other mechanism, such as electronic mail, newsgroups, web pages, and other mechanisms. Other standards 30 may be employed in further embodiments for controlling call sessions over the data network 12. Such other standards may be any other standard that provides for

interactive, real-time streaming communications over the data network 12. One alternate standard is the H.323 Recommendation from the International Telecommunication Union (ITU).

As used here, a "call" or "call session" refers generally to either an audio (e.g., voice), a video, or a multimedia session established between two or more network elements (and parties using those elements) coupled to the data network 12 (or any other packet-based data network). A call session may also be a text-based chat session, such as an instant messaging session. A "real-time" interactive call session refers to an exchange of data, such as audio and/or video data (or text data), on a substantially real-time basis between two terminals. A session is substantially real time if interaction is occurring between two end points or parties, with a communication from one end point followed relatively quickly by a response or another communication from the other end point, typically within seconds, for example.

Interactive call sessions are contrasted with electronic mail messaging, for example, in which a first participant sends a message over a data network to a second participant. No indication is usually provided back to the first participant that the second participant has received the message or that the second participant is even at his or her terminal. In contrast, an interactive session involves a request followed by some acknowledgment that a called party has accepted the call request. This enables the interactive session in which participants exchange data (e.g., voice, video, and/or text).

In accordance with one embodiment, the protocol-aware application 22 in the user agent server 20 extracts the content of messages relating to states of a call session between the server 20 and the client 22. The content extracted may be used to access the database 32 of the web server 40 for data relevant to the call session. The data may automatically be supplied to the called party as a web page. These operations may be performed transparently such that the user agent server 20 receives the relevant data by the time the connection between the telephone 26 and the telephone 16 is established.

In one embodiment, SIP is utilized to pass telephony-style information or call control messages from the user agent client 10 to the user agent server 20 across the data network 12. SIP is one of several possible protocols that may be used to initiate sessions between two or more entities on a network. Using SIP, both callers and receivers are identified by addresses. A SIP client system includes an application program that is capable of sending SIP requests to perform call requests. A SIP server system includes a server application program that accepts SIP requests to service calls and to send back responses to SIP requests. The user agent client 10 of Figure 1 is thus a SIP client system while the user agent server 20 is a SIP server system. The designation of "client" and "server" may be switched, depending upon who initiates the call session.

In Figure 2, a block diagram of the user agent server 20 according to one embodiment is illustrated. The user agent server 20 includes a network interface 70 that may be coupled to the data network 12. Above the network interface 70 are several software layers, including a network device driver layer 64, and transport and network stacks 62 and 68 (e.g., TCP/IP and UDP/IP stacks). TCP is described in RFC 793, entitled "Transmission Control Protocol," dated September 1981; UDP is described in RFC 768, entitled "User Datagram Protocol," dated August 1980. TCP and UDP are transport layers for managing connections between network elements on an IP network. In further embodiments, other types of transport and network stacks may be used.

Another software layer includes an RTP layer 60. The Real-Time Transport Protocol (RTP) is described in RFC 1889. The RTP layer 60 processes and generates real-time data frames (containing data associated with an audio call, for example). The RTP layer 60 may be connected to an audio coder/decoder (codec) 54, which is coupled to converters 56 (e.g., analog-to-digital and digital-to-analog converters). The converters 56 are coupled to an audio interface 58 that may in turn be coupled to a speaker, headphone, and/or microphone (not shown) for presenting and receiving audio signals.

Packets received by the network interface 70 are passed up through the several layers 64, 62 and 68. Control packets are transmitted by the TCP/IP or

UDP/IP stack 62 or 68 through a SIP stack 66 to the protocol-aware application software 22. Instructions and data associated with the protocol-aware application software 22 may be stored in a storage device 52, with the instructions executable on a control unit 72. The protocol-aware application software 22 is described in more detail, below.

In one embodiment, the SIP stack 66 is responsible for processing SIP message communications over the data network 12. The SIP stack 66 is in communication with the protocol-aware application software 22. The SIP stack 66 is generally a state machine that provides parsing, processing, and generation of SIP requests and responses.

The protocol-aware application 22, in one embodiment, is a SIP-aware application. The SIP-aware application 22 is coupled to the SIP stack 66 to receive control signaling from the SIP stack 66 or to provide control signaling to the SIP stack 66 for generation of SIP messages. The SIP-aware application 22 may thus make decisions on how to process and respond to received SIP messages.

For example, such SIP messages may be messages inviting the user agent server 20 to participate in a call session as well as various response messages indicating various stages of the progress of a call session setup. The protocol-aware application 22 may also receive input from a user, such as through a display 50. Based on the user input, the protocol-aware application 22 may send request or response messages through the SIP stack 66 to the data network 12 indicating initiation of a call, acceptance of a call request, or forwarding of the call to another device. Such tasks performed by the protocol-aware application 22 are examples of call control and status tasks.

Upon receiving SIP information from the user agent client 10, the protocol-aware application 22 builds a query string coupled with a uniform resource locator (URL). The URL is essentially an address, which identifies a server on the data network 12. In this case, the web server 40 may be identified by its URL. An example of a URL/query string combination is illustrated in an address field 100 of Figure 3.

The query string includes the relevant SIP information with which the web server 40 may search its database 32. From there, the web server 40 may dynamically build a web page and send the web page to the user agent server 20, such as to be displayed on a web browser 74, viewable on the display 50.

5 In Figure 4, in one embodiment, the protocol-aware application software 22 is a SIP-based application. Accordingly, the user agent client 10 initiates a call session with the user agent server 20 by sending a SIP INVITE message. Upon receipt of the INVITE message (block 202), the user agent server 20 is notified of the initiation of the call session. In response to the SIP INVITE message, the protocol-aware
10 application software 22 may initiate database retrieval from the web server 40.

Header information in the SIP message may be supplied to the protocol-aware application software 22. Examples of information supplied in the SIP header include an identifier of the calling party, an identifier of the called party, and the language of the call session, to name a few.

15 In one embodiment, the protocol-aware application software 22 converts the information extracted from the SIP header into a URL and query string combination (block 204), which is sent to the web browser software 24, also in the user agent server 20. Any or all of the supplied SIP header information may be used to create the query string. In other words, the SIP information is translated to a format that
20 the web browser software 24 may readily send to the web server software 42, located on the web server 40.

Thus, the web browser software 24 submits the URL/query string information to the web server 40, such as may be received by the web server software 42 (block 206). The web server software 42 may then parse and use the information to
25 retrieve data from the database 32.

Using the query string contents, the web server software 42 may dynamically build a web page that may convey this as well as information retrieved from the database 32 (block 208). In one embodiment, the web server software 42 generates a Hyper-Text Markup Language, or HTML, document. HTML documents
30 are script-like documents that allow web browsers to generate a web page. Alternatively, other languages that enable web browsers to build web pages may be

used, such as the Extensible Markup Language (XML). Once the HTML document is generated, the web server software 42 sends the web page, in HTML form, to the user agent server 20, to be retrieved by the web browser software 24 (block 210). The web browser software 24 may then display the web page for viewing on the display 50 by the called party 20.

The operations of Figure 4 may be performed substantially simultaneously with the initiation of the call session by the user agent client (caller) 10. Alternatively, the operations of Figure 4 may be performed after the call session has been established. In one embodiment, by the time the caller 10 and called 20 parties are speaking, the web page is already displayed for the called party 20. Further, as the call progresses, additional information may be sent to the web page as needed, in some embodiments. Such additional information may include identification of the calling state (e.g., call on hold, call released, etc.). The change in call state may cause the web page to display different information or to perform further navigation of the database 32.

The language information supplied during the SIP transmission may also be used in generating a customized web page. For example, the web page may be displayed in the relevant language. As another option, additional information may be displayed on the web page that is relevant to the particular language being communicated. Likewise, other information such as the calling party's area code may identify to the called party unique requirements or considerations that may be reflected in the web page. A variety of implementations that associate the supplied information to the database 32 for creation of a customized web page may be possible.

Further, the SIP requests (INVITE, BYE, etc.) and the SIP responses (RINGING, OK, etc.) may be used as state values representing various states of a call session. The state information may be passed to the web page along with the content of the SIP messages. For example, one web page may be supplied to the called party upon receiving a SIP INVITE message, while another web page may be supplied to the called party upon receiving a SIP BYE message.

In Figure 5, when the user agent client (caller) 10 ends a call session, the protocol-aware application software 22 receives a SIP BYE message (block 252), according to one embodiment. In response to the SIP BYE message, the protocol-aware application 22 extracts information supplied with the BYE message and converts the information to a form understandable by the web browser software 24, e.g., a URL/query string combination (block 254). The web browser software 24 sends the information to the web server software 42 (block 256). As with the SIP INVITE message, the web server software 42 dynamically builds a web page, based upon the new information (block 258). Finally, the web server software 42 sends the new web page, such as in HTML form, to the web browser software 24 (block 260). The web browser software 24 may then send a web page to the display 50 on the user agent server 20.

The disclosed embodiments may be used in a variety of environments. For example, the user agent server 20 may operate as part of a reservation system, such as for an airline, a hotel, car rental agency, or other suppliers of travel services. Alternatively, the user agent server 20 may be a technical support department of a company, such as may be sought to diagnose computer problems for calling user agent clients 10.

In some of these environments, additional information may be included in SIP messages such that more information is available with which to access the database 32. Such additional information may be in the form of an extension to the SIP header or contained in the SIP message body. For example, a serial number such as of a user agent client's computer may be supplied along with the SIP information. As another example, the revision number of a software program located on the user agent client 10 may be supplied with the SIP information. Thus, the information transmitted using SIP, or other protocol, may be customized to the desires of the user agent server 20. For example, if the call is from a customer seeking technical support, such information may be used to identify the product that the customer is calling about.

Further, the user agent server 20 may receive an incoming SIP INVITE without having a web browser loaded. A web browser may be launched in response

to a SIP INVITE message, or, alternatively, a distinct graphical user interface may be presented instead of a web browser. In the latter example, additional software may be necessary for communication between the user agent server 20 and the web server 40, since no web server/web browser environment exists. However, the use of the SIP or other IP telephony protocol to transmit data that may be used to access a database is not dependent on the availability of web-based software.

In Figure 6, example message flows involving the user agent client 10, the user agent server 20, and the web server 40 of Figure 1 are illustrated according to one embodiment. The example flows are SIP messaging flows, as described in Figures 4 and 5. In further embodiments, other protocols such as H.323 may be employed.

The user agent client 10 sends an INVITE message (at 400) to the user agent server 20. The INVITE message is defined by SIP and indicates that the user agent server 20 is being invited to participate in a call session. Upon receiving the INVITE message, the user agent server 20 sends the URL/query string combination to the web server 40 (at 414) to provoke access of the database 32 by the web server software 42.

Before acceptance of the call request, the user agent server 20 responds with a SIP RINGING message to the user agent client 10 (at 402). Once the call is accepted, the user agent server 20 may respond with a SIP OK message (at 404) to the user agent client 10 to indicate that the request has succeeded. Meanwhile, from the web server 40, an HTML web page is sent to the user agent server 20 (at 416). After receipt of the OK response, the user agent client 10 then sends (at 406) an ACK request, confirming that the user agent server 20 has received a final response to an INVITE request. Upon receipt of the ACK request, further exchanges of protocol messaging establishes a call session (at 408) in which exchanges between the user agent client 10 and the user agent server 20 may be made. By this time, the HTML web page may already be displayed on the user agent server 20.

To terminate the call session, the user agent client 10 may send a BYE request (at 410). Meanwhile, a URL/query string may be communicated to the web

server 40 by the user agent server 20 (at 418). The user agent server 20 then returns an OK response (at 412) back to the user agent client 10 in response to the BYE request. Likewise, in response to the URL/query string submission, the web server 40 submits an HTML web page (at 420) to the user agent server 20. In this manner, the called party, located at the user agent server 20, may be provided with a final web page associated with the calling party 10.

The storage device 52 of Figure 2 may include one or more machine-readable storage media for storing data and instructions. The storage media may include different forms of memory including semiconductor memory devices such as dynamic or static random access memories (DRAMs or SRAMs), erasable and programmable read-only memories (EPROMs), electrically erasable and programmable read-only memories (EEPROMs) and flash memories; magnetic disks such as fixed, floppy and removable disks; other magnetic media including tape; and optical media such as compact disks (CDs) or digital video disks (DVDs). Instructions that make up the protocol-aware application 22, the RTP layer 60, and the UDP/IP, TCP/IP, and SIP stacks 62, 68 and 66 may be stored in the storage device 52. The instructions when executed by the control unit 72 cause the user agent server 20 to perform programmed acts.

The instructions of the protocol-aware application 22 as well as the other network layers 62, 68 and 66 of Figure 2 may be loaded or transported to the user agent server 20 in one of many different ways. For example, code segments including instructions stored on floppy disks, CD or DVD media, a hard disk, or transported through a network interface card, modem, or other interface device may be loaded into the system and executed as corresponding software routines, modules, or layers. In the loading or transport process, data signals that are embodied in carrier waves (transmitted over telephone lines, network lines, wireless links, cables, and the like) may communicate the code segments, including instructions, to the user agent server 20. Such carrier waves may be in the form of electrical, optical, acoustical, electromagnetic, or other types of signals.

While the invention has been disclosed with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and

variations therefrom. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of the invention.

What is claimed is:

- 1 1. A method comprising:
2 receiving a message relating to a call session over a data network;
3 extracting information from the message;
4 sending the information to a web browser; and
5 updating data in the web browser based on the message information.
- 1 2. The method of claim 1, wherein updating data in the web browser
2 based on the message information includes:
3 supplying the information to a web server;
4 accessing a portion of a database based on the information; and
5 displaying a web page including the accessed portion.
- 1 3. The method of claim 2, further comprising building a web page based
2 upon the accessed portion
- 1 4. The method of claim 3, wherein building the web page includes
2 generating a Hyper-Text Markup Language document.
- 1 5. The method of claim 2, wherein supplying the information to the web
2 server includes transmitting a uniform resource locator and a query string to the web
3 server.
- 1 6. The method of claim 1, wherein receiving the message relating to a
2 call session over a data network includes receiving a Session Initiation Protocol
3 INVITE message.
- 1 7. The method of claim 6, further comprising:
2 presenting the data as a web page on a display.

1 8. A method comprising:
2 receiving a query string from a web browser, the query string
3 containing information extracted from a message relating to a call session;
4 accessing a database based upon the query string; and
5 sending a portion retrieved from the database to the web browser for
6 display on the web browser.

1 9. The method of claim 8, wherein receiving the query string from the
2 web browser includes receiving an identifier of a calling party.

1 10. The method of claim 8, wherein sending the portion retrieved from the
2 database to the web browser includes sending a Hyper-Text Markup Language
3 document to the web browser.

1 11. A system comprising:
2 a network interface capable of communicating over a network coupled
3 to a second system including a database;
4 a display; and
5 a controller which, upon receiving a message relating to a state of a
6 call session:
7 extracts information from the message to build a query string;
8 sends the query string to the second system; and
9 receives data from the second system in response to the query
10 string that is presentable on the display.

1 12. The system of claim 11, wherein the message includes a Session
2 Initiation Protocol message.

1 13. The system of claim 12, wherein the Session Initiation Protocol
2 message includes an INVITE message.

1 14. The system of claim 12, wherein the Session Initiation Protocol
2 message includes a BYE message.

1 15. The system of claim 11, wherein the controller includes a web browser
2 program capable of communicating with a web server program on the second
3 system.

1 16. The system of claim 15, wherein the controller further includes a
2 protocol-aware application capable of processing the message.

1 17. The system of claim 15, wherein the query string is further associated
2 with a uniform resource locator.

1 18. The system of claim 15, wherein the web browser program sends the
2 query string to the web server program.

1 19. The system of claim 15, wherein the data received from the second
2 system in response to the query string includes a Hyper-Text Markup Language
3 document.

1 20. The system of claim 15, wherein the data that is presentable on the
2 display includes a web page.

1 21. A computer program product comprising a computer-readable medium
2 having thereon computer program code means to make a system execute a method
3 comprising:

4 receiving a message relating to a call session over a data network;
5 extracting information from the message;
6 sending a query string including the information to a system connected
7 to the data network; and
8 receiving data from the system in response to the query string.

1 22 The computer program product of claim 21, wherein the method
2 further comprises presenting the data in a web browser on a display.

1 23 The computer program product of claim 21, wherein the method
2 further comprises receiving a web page from the system.

1 24 The computer program product of claim 21, wherein the method
2 further comprises responding to the message with a call session response message.

1 25. The computer program product of claim 21, wherein receiving the
2 message comprises receiving a Session Initiation Protocol message.

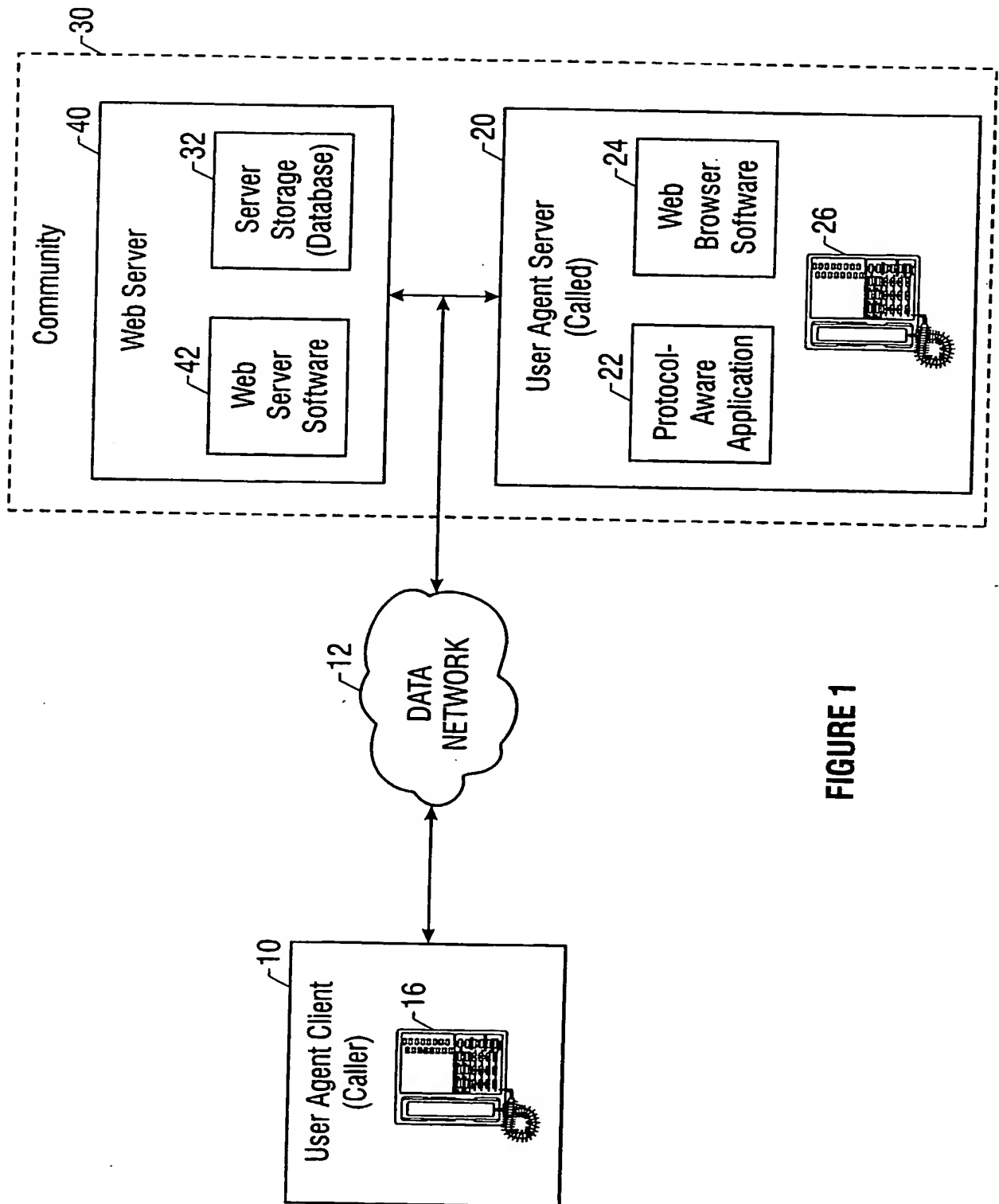


FIGURE 1

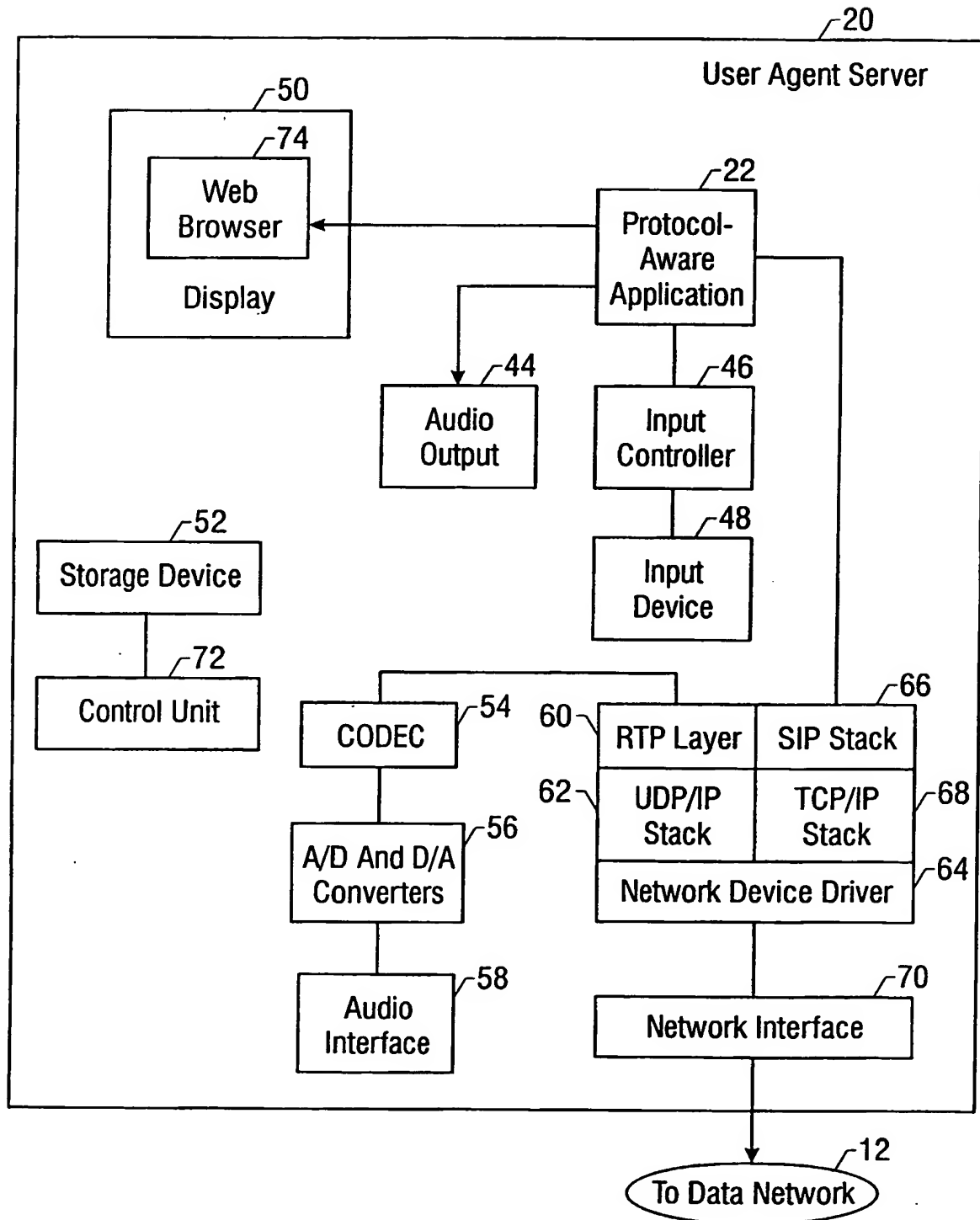


FIGURE 2

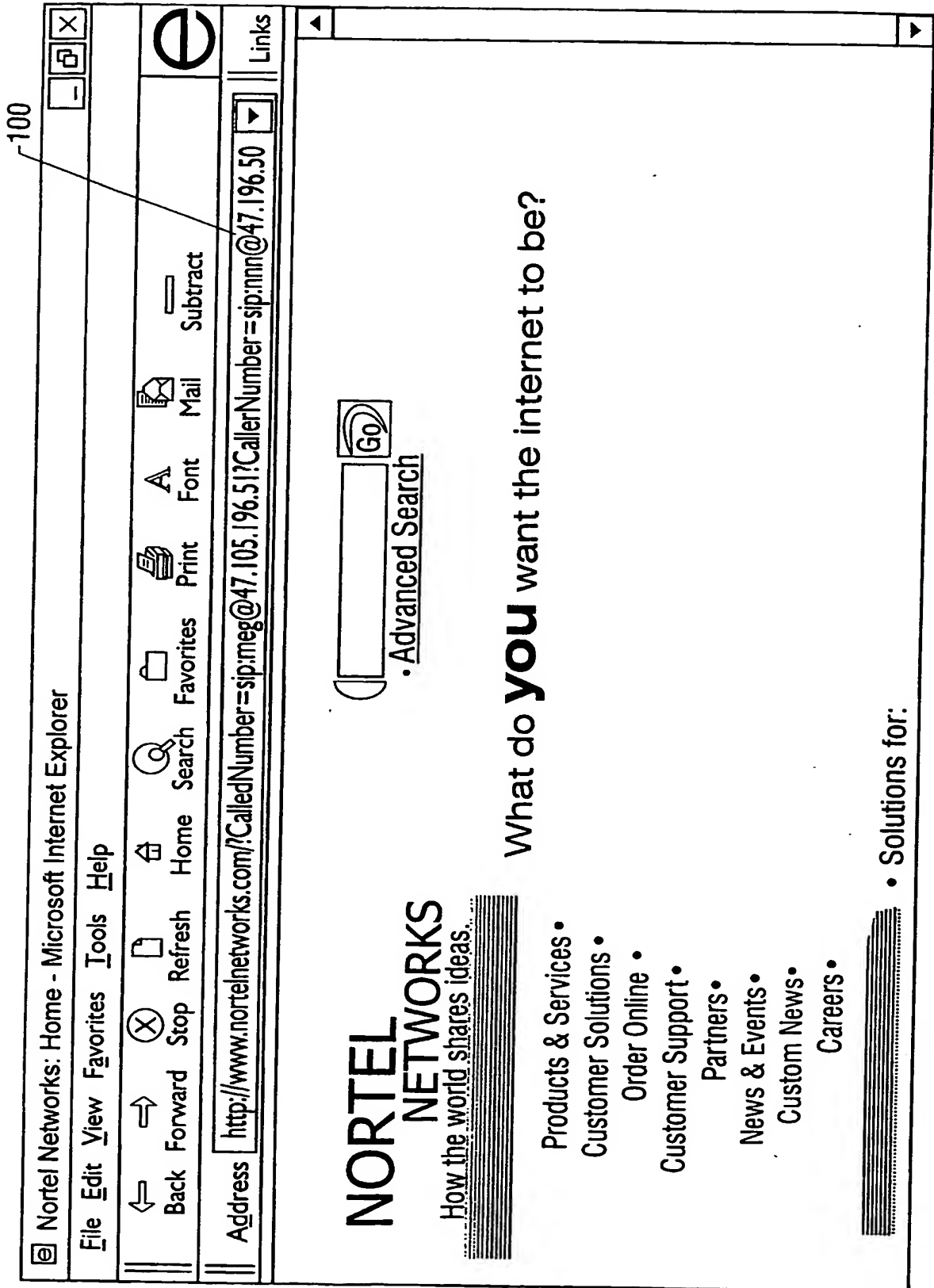
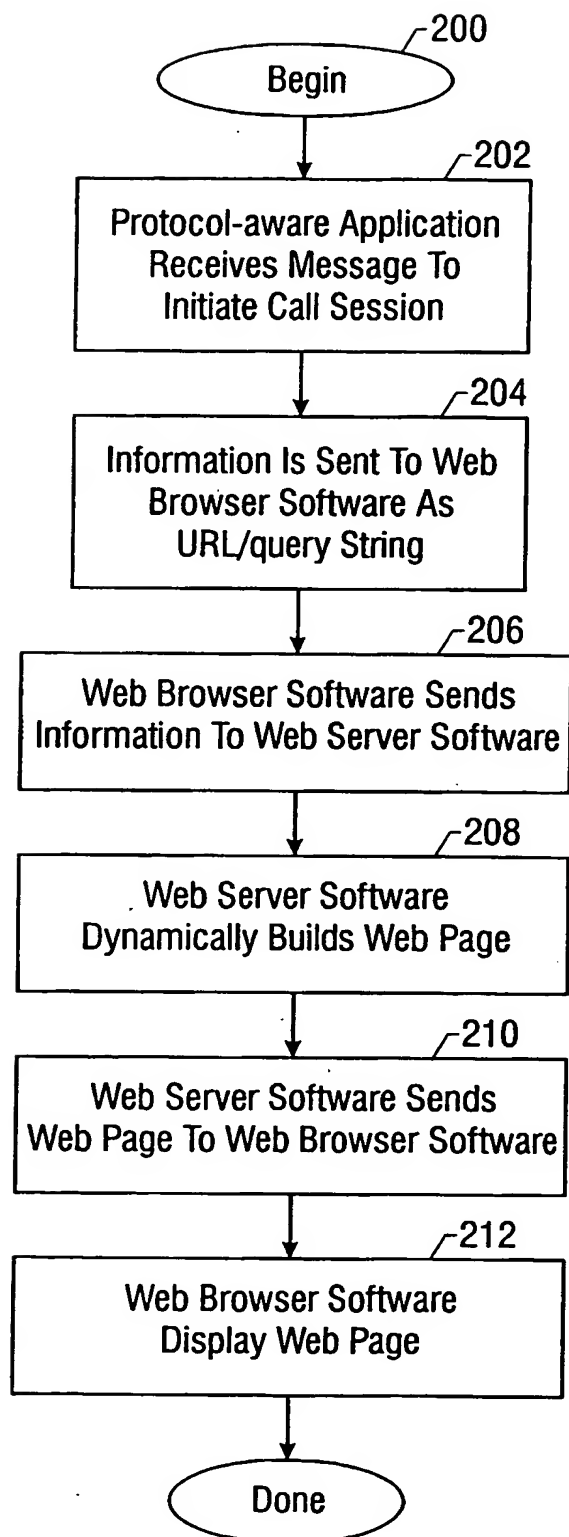
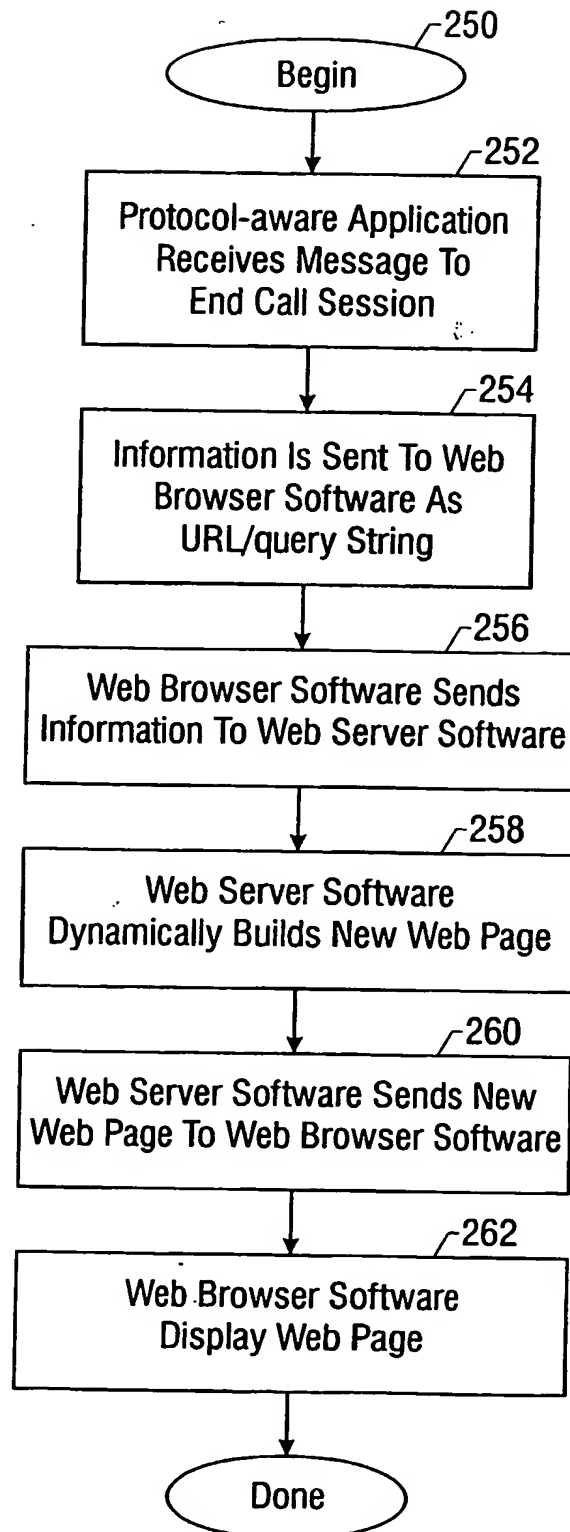


FIGURE 3

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**FIGURE 4**

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**FIGURE 5**

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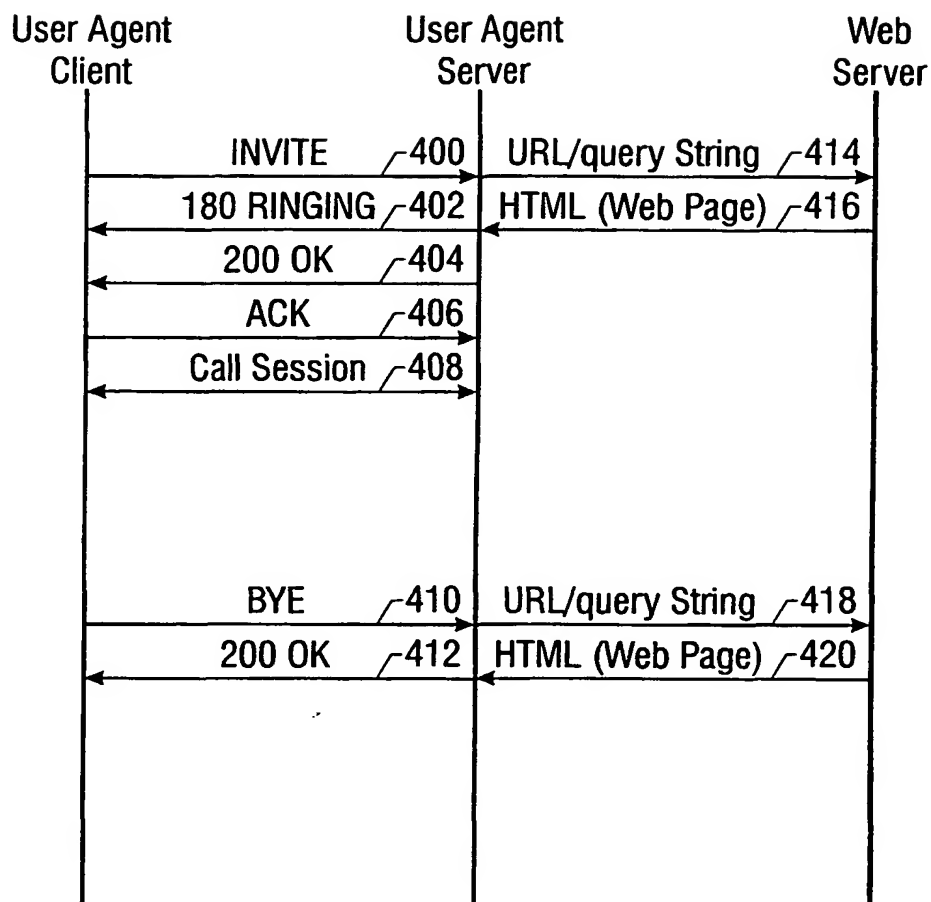


FIGURE 6

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29 November 2001 (29.11.2001)

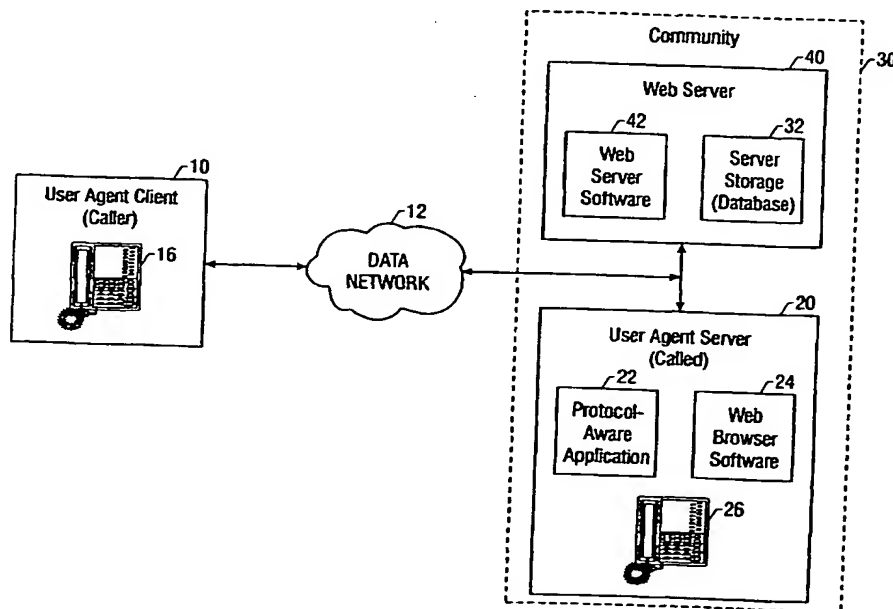
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- (74) Agent: HU, Dan, C.; Trop, Pruner & Hu, P.C., Suite 100, 8554 Katy Freeway, Houston, TX 77024 (US).
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[Continued on next page]

(54) Title: PROCESSING OF CALL SESSION INFORMATION



(57) Abstract: An agent server (20) receives a message relating to a call session from an agent client (10) connected to a data network (12). The agent server (20) extracts information from the message, sends the information to a web browser (24), and updates data in the web browser (24) based upon the message information. The data may be displayed in a web page and may include information pertinent to the call session. The data is provided automatically in real time.

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International Application No

PCT/US 01/17101

A. CLASSIFICATION OF SUBJECT MATTER
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According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04M H04L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC, IBM-TDB, COMPENDEX

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	EP 1 093 281 A (NORTEL NETWORKS LTD) 18 April 2001 (2001-04-18) abstract paragraph '0006! - paragraph '0009! paragraph '0011! - paragraph '0012! paragraph '0026! - paragraph '0031! paragraph '0047!	1-25
P,X	WO 01 33418 A (NOKIA NETWORKS OY ;NOKIA INC (US)) 10 May 2001 (2001-05-10) abstract page 6, line 18 -page 7, line 27 page 19, line 25 -page 20, line 10 page 23, line 20 - line 29 page 24, line 17 - line 30	1-13, 15-25

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Date of the actual completion of the international search

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			WO 0133418 A2	10-05-2001